

9. Mitchell

Program Name: Mitchell.java

Input File: mitchell.dat

As you've been writing all of these programming problems, your laptop is filling up with space. Now you're looking through your computer to try and free up space but it's difficult to tell how much space you would free up because your computer isn't telling you the size of the directories for some reason. You decide to write a program to see how much space you could save by deleting a specific file or directory.

Input: The first input line will contain a single integer N ($1 \leq N \leq 100$) denoting the number of test cases that follow. Each test case will start with two space separated integers F ($1 \leq F \leq 10^5$) and Q ($1 \leq Q \leq 10^4$) denoting the total number of entries (files + directories) and the number of queries respectively. The following F lines will contain either a file entry or a directory entry. The input formats of these can be seen below. The next Q lines will contain a single value V , being the Id of the directory/file you want to query.

File format – "Id": ID, "type": TYPE, "name": NAME, "size": SIZE, "parentId": ID
 Directory format – "Id": ID, "type": TYPE, "name": NAME, "parent": ID

ID will be an integer value, TYPE will be either directory or file, NAME will be a string, SIZE will be an integer representing the file size in KB, parent will be an integer representing the ID of the parent directory.

Note that parent Id will be -1 if it is a top-level entry, and every parent Id will be greater than its children's Ids.

Output: Output the amount of space that would be saved by deleting the provided file/directory id for each query.

Sample input:

```
1
9 3
"Id": 0, "type": directory, "name": root, "parentId": -1
"Id": 1, "type": directory, "name": programs, "parentId": 0
"Id": 2, "type": directory, "name": stuff, "parentId": 0
"Id": 3, "type": file, "name": image.jpg, "size": 40, "parentId": 2
"Id": 4, "type": file, "name": file.txt, "size": 212, "parentId": 2
"Id": 5, "type": directory, "name": morestuff, "parentId": 2
"Id": 6, "type": file, "name": somedoc.docx, "size": 50, "parentId": 5
"Id": 7, "type": file, "name": anotherfile.dat, "size": 30, "parentId": 5
"Id": 8, "type": file, "name": pic.png, "size": 13, "parentId": 0
0
5
2
```

Sample output:

```
345
80
332
```